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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

re patent application of:

Thomas J. Foth

) Date: May 25, 2006

Serial No.: 09/751,604

) Attorney Docket No.: F-220

Filed: December 29, 2000

) Customer No.: 00919

Confirmation No.: 8551

) Group Art Unit: 2157

) Examiner: Emmanuel Coffy

Title: **METHOD FOR LOAD BALANCING OF REQUESTS FOR SERVICE BY DEVICES
ON A NETWORK AND A DEVICE AND A NETWORK FOR CARRYING OUT SUCH
METHOD**

TRANSMITTAL OF APPEAL BRIEF (PATENT APPLICATION 37 CFR 1.192)

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith in triplicate is the **APPEAL BRIEF** in the above-identified patent application with respect to the Notice of Appeal filed on March 1, 2005.

Pursuant to 37 CFR 1.17(c), the fee for filing the Appeal Brief is \$500.00.

Please charge Deposit Account No. **16-1885** in the amount of \$500.00 to cover the above fees. The Commissioner is hereby authorized to charge any additional fees which may be required to Deposit Account No. **16-1885**.

A duplicate copy of this transmittal is enclosed for use in charging the Deposit Account.

Respectfully submitted,

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CERTIFICATE OF MAILING

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Thomas J. Foth) Group Art Unit: 2157
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Title: **METHOD FOR LOAD BALANCING OF REQUESTS FOR SERVICE
BY A DEVICE ON A NETWORK AND A DEVICE AND A NETWORK
FOR CARRYING OUT SUCH METHOD**

APPELLANT'S BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed in this case on April 12, 2006.

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TABLE OF CONTENTS

- I. REAL PARTY IN INTEREST
- II. RELATED APPEALS AND INTERFERENCES
- III. STATUS OF CLAIMS
- IV. STATUS OF AMENDMENTS
- V. SUMMARY OF CLAIMED SUBJECT MATTER
- VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL
- VII. ARGUMENTS
- VIII. APPENDIX OF CLAIMS INVOLVED IN THE APPEAL
- IX. EVIDENCE APPENDIX
- X. RELATED PROCEEDING APPENDIX

I. REAL PARTY IN INTEREST

Pitney Bowes Inc. is the real party in interest.

II. RELATED APPEALS AND INTERFERENCES

There are no related Appeals and interferences.

III. STATUS OF CLAIMS

- a) Claims 1 – 7, 9 -15 and 17 - 27 are in the application.
- b) Claims 1 – 7, 9 -15 and 17 – 27 are rejected.
- d) Claims 1 – 7, 9 -15 and 17 – 27 are on appeal.

IV. STATUS OF AMENDMENTS

No Amendment subsequent to the Final Rejection of April 17, 2006, was entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

A. Background

Prior art methods did not provide for balancing the load of requests from a plurality of network devices for service from a selected one of a plurality of service providers; and a network connecting the devices and service providers, and a network device programmed to carry out the method.

The subject invention relates to communication on a network among a plurality of devices requesting service and a plurality of service providers.

More particularly, it relates to balancing the load of service requests among the service providers.

It is common for devices on a network to request required services from a service provider on the network. Such services may be any type of data service that is more readily carried out by a remote service provider, such as updating of databases, downloading software, remote diagnostics, or computationally intensive operations.

In networks where there is a heavy volume of service requests from a large number of devices, having a number of service providers capable of providing the requested services on the network generally will provide better response, increase reliability, and be more economical than providing a single service provider capable of handling peak loads. Such networks will be more effective if some mechanism for "load balancing" is provided. By "load balancing" herein is meant distributing requests for service substantially uniformly over the service providers on the network. Heretofore, load balancing typically has been carried out by directing all requests to a central site, which would direct the request to one of the service providers.

While effective this method has certain disadvantages. The increase in network traffic to route all requests through a central site may cause a corresponding increase in response time. It is known for some load balancers to redirect a device that uses that address until the connection completes. In this way, the load balancer is only affected by the traffic from devices at the start of connection. Often there is more than one load balancer in the network so that if the primary fails, the backup is discovered (by way of Domain Name Services alternates) and used. Also, such load balancing mechanisms will route requests based on the network address of the requesting device, which may not reflect the actual geographic location of the requesting device and may result in requests being serviced by a geographically remote service provider. (It is believed that the optimum service provider generally will be the geographically closest available service provider.) For these and other reasons, some networks do not provide load balancing.

It is noted that there are load balancers that operate at the ends of a network, but to be effective, they need to operate over a majority of network endpoints. For small to medium applications, such as Internet appliances that only very occasionally connect, this means this type of load balancing is not cost effective.

Thus, it is an object of the subject invention to provide a more effective and simpler method for load balancing on a network, and a device capable of carrying out that method, and a network incorporating such devices.

B. Appellant claims a method that assesses a table to retrieve a service provider address associated with a service provider location code geographically closest to a retrieved location code; so that utilization of the service providers is systematically load balanced with respect to the geographic location of the client.

The claimed invention balances the load of requests from a plurality of network devices for service from a selected one of a plurality of service providers; and a network connecting the devices and service providers, and a network device programmed to carry out the method. Devices and service providers communicate over the net in any convenient manner; which can include any of numerous known network architectures and compatible protocols. In accordance with the subject invention, each of the devices stores a location code indicative of geographic locations of the devices and stores a table relating geographic location codes and network addresses for the service providers. Each of the devices is programmed so that a requesting device initiates a request by: 1) retrieving the location code for the requesting device; 2) accessing the table to retrieve a service provider address associated with a service provider location code closest to the retrieved location code; and 3) addressing the initiated request with the retrieved service provider address.

In accordance with a broad aspect of the subject invention, the network device can carry out any convenient function and the service providers can

provide any convenient function. The network device may be any device which may know as a matter of its operation, its geographic address.

In accordance with another aspect of the subject invention, the network device is a mailing device.

In accordance with another aspect of the subject invention, at least an approximate distance between two geographic locations can be calculated as a function of location codes corresponding to the two locations.

In accordance with still another aspect of the subject invention, devices access the table to retrieve another service provider address associated with a service provider location code next closest to the retrieved location code if they cannot log on to the service provider.

Other objects and advantages of the subject invention will be apparent to those skilled in the art from consideration of the detailed description set forth below and the attached drawings.

Claim 1 is the only independent method claim in this patent application that is on appeal. Claim 1 is a method for balancing the load of requests from a plurality of network devices for service from a selected one of a plurality of service providers, the devices and the service providers being interconnected by a network. The method comprising the steps of:

a) in each of said devices, storing a location code indicative of geographic locations of said devices;

b) in each of said devices, storing a table relating geographic location codes and network addresses for said service providers; and

c) said devices being programmed so that a requesting device initiates a request by:

c1) retrieving said location code for said requesting device;

c2) accessing said table to retrieve a service provider address associated with a service provider location code geographically closest to said retrieved location code; so that utilization of the service providers is systematically load balanced with respect to the geographical location of the client

c3) addressing said initiated request with said retrieved service provider address; and

d) accessing by said devices a seed system to download an updated table if said devices cannot access the service provider retrieved from said table.

Appellants claimed invention is shown in Fig. 1 and Figs. 3A and 3B, which are described in page 4, line 17 to page 6, line 7 and page 7, line 11 – page 10, line 22 of Appellants' Patent Application. A copy of Fig.1 appears next to this page.

Figure 1 shows a plurality of network devices 10 connected by data links 12 to a communications network and a plurality of data centers 30 connected to network 20 by communications links 14. Data centers 30 include service providers 32A and 32B (hereinafter sometimes referred to generally as service providers 32) which provide services to network devices 10. In general, devices 10 can carry out any convenient function, and service providers 32 can provide any convenient service, such as updating of data bases, downloading of software, off-line computationally intensive operations and diagnostics. (It should be noted that, while various network devices 10 can have different functions and various service providers 32 can provide different services, their operations and functions are substantially identical in balancing the load created by requests for service in accordance with the subject invention.) In a preferred embodiment of the subject invention, network devices 10 include mailing devices, such as postage meters and rating scales, which determine postage amounts or shipping charges for mail pieces or packages to be shipped. Comprising of such mailing devices in a system in accordance with the subject invention is believed to be advantageous in that it is inherently beneficial to provide communications with a service provider; postage meters can more easily keep track of funds equivalents and rates used by scales can be easily updated. Further, mailing devices inherently must store the zip code of their geographical location. (Scales compute rates as a function of the origin zip code and the input destination zip code and, so, are initially programmed with the zip code of their geographic

location. Postage meters, on the other hand, are required to be used at a particular location and to store the zip code of that location. The importance of the zip code of the location at which the device is used will be explained more fully below.)

The preferred embodiment of the subject invention also includes other network devices, such as consumer appliances (refrigerators and the like) that communicate over a network, such as the Internet. Such consumer appliances may be candidate devices for this system inasmuch as they can be made aware of their location to fulfill warranty requirements. Also, cellular telephones with Internet interfaces which have a mandate to provide geographic location by the Federal Communications Commission, as well as devices on wireless networks, such as Mobitex (used by, for example, the Palm™ VII), which provide the address of the base station servicing the wireless device, are candidates for the present invention.

Figure 3A appears next to this page.

Figures 3A and 3B show a flow diagram of the operation of device 10 in accordance with relevant portions of the program code to request service from a service provider. At 40, device 10 retrieves the previously stored location code, which in a preferred embodiment will be a zip code but which can be any convenient code. As noted above, where device 10 is a postage meter, postal regulations require that it store the zip code of the post office at which the metered mail must be deposited (which is presumed by the system to be geographically close to the meter). Where device 10 is a rating scale, the scale requires a local zip as well as a destination zip to compute costs for distance ("zone") sensitive rates. Thus, the zip code for the geographic location of such devices will be readily available. Other methods for establishing the location code for device 10 are also within the contemplation of the subject invention. Such methods can include, without limitation, input by the device operator, input during installation or set-up, down loading through network 20 in response to a communication, either on-line or off-line. For example, an off-line communication can be receipt of a warranty card, which would include the location of device 10

so that service can be efficiently dispatched. Where device 10 is a mobile device, it can include a Geographic Positioning System (GPS) to monitor its location. As previously stated, where device 10 is a mobile device, the base station servicing the device may furnish its fixed geographic location.

At 42, device 10 accesses table 10-1-2. Each record in table 10-1-2 relates the location code of a service provider and its network address. Preferably, the location codes are so designed that at least an approximate distance between device 10 and one of service providers 32 can be analytically computed from the respective location codes. An example of such conversion, referred to as "zip-to-zone" conversion, is described in U.S. Patent No. 4,122,526, titled CALCULATING AND POSTAL ZIP CODE-TO-POSTAL ZONE CONVERTING APPARATUS. Where location codes are fully analytical so that at least sometimes distances cannot be computed, look-up tables can be provided. Device 10 then determines the network address of the closest service provider.

At 46, device 10 then determines if the address is valid. For example, an invalid address can be indicated by receipt of a "fatal address error" message.

If the address is invalid, at 50, device 10 obtains an address for seed system 34, which communicates through network 20 over communications link 16, and at 52 logs on to system 34 to download a current table. Seed system 34 can be a dedicated system or can be a designated one of service providers 32. Device 10 would be programmed at the factory with the seed address. If the seed address changed, device 10 can obtain the new seed system address in any convenient manner such as, for example, having an operator place an off-line service call to obtain the address and enter it through interface 10-4. Device 10 then returns to 42 to obtain a service provider address from the current table.

If the address is valid, at 54, device 10 attempts to log on to the selected one of service providers 32, and, if the log on is determined successful at 58, at 60 sends a service request to that provider and exits.

In a preferred embodiment of the subject invention, two of service providers 32 may share the network address of a data center 30. Devices 10 will

be assigned to one of service providers 32 at center 30 as primary, and to the other as alternate, in any convenient manner. For example, devices 10 with even serial numbers can be assigned to service provider 32A as primary while devices 10 with odd numbers are assigned to service provider 32B.

Thus, if the log-on attempt is determined unsuccessful at 58, at 62 device 10 attempts to log on to the alternate one of service providers 32, and, if the log on is determined successful at 66, at 60 sends a service request to the alternate provider and exits.

Figure 3B appears next to this page.

If the log-on attempt is determined unsuccessful at 66, at 68 device 10 returns to the table to search for the next closest one of service providers 32.

If at 70 device 10 determines that another service provider has been found, then at 74 device 10 attempts to log on to its primary one of service providers 32, and, if the log on is determined successful at 76, at 60 sends a service request to the alternate provider and exits. If the log-on attempt is determined unsuccessful at 76, at 78 device 10 attempts to log-on to the alternate one of service providers 32 at the closest (and now current) network address, and, if the log on is determined successful at 82, at 60 sends a service request to the alternate provider and exits. If device 10 is unsuccessful in logging on, then at 82, it returns to 68 to search the table again. When at 70 no service provider address can be found, device 10 sends an error message and exits, or exits to some other convenient error routine.

Thus, it can be seen that the subject invention will efficiently balance the load of service requests on the network by assigning each request to the available service which is geographically closest, without requiring a central cite or other network hardware or software to assign requests. It is believed that the subject invention will thus, substantially reduce network complexity and traffic flow relating to load balancing. This scheme reduces the need for central load balancing equipment to the point where a simple system distributes new address tables only to those devices that do not have accurate tables. The devices are systematically load balanced across service providers geographically closest and

further statistically load balanced to specific systems at those geographically close service provider sites. The potential for load balancer failure is eliminated inasmuch as no load balancers exist in the described system. Initial connection times are enhanced, because there is no need for initial redirection. Finally, this system is compatible with numbered addressing systems such as Internet Protocol (IP) addresses directly and does not rely on the complexity of resolving Universal Resource Locators (URLs) or other such names. This simplifies device design and construction.

Claim 9 is the first of the two apparatus claims in this patent application that is on appeal. Claim 9 is a network device, for receiving service from a selected one of a plurality of service providers when the device and the service providers are interconnected by a network. The said device comprising:

- a) a first data store storing a location code indicative of said device's geographic location;
- b) a second data store storing a table relating geographic location codes and network addresses for said service providers; and
- c) said device being programmed to initiate a request by:
 - c1) retrieving said location code for said device;
 - c2) accessing said table to retrieve a service provider address associated with a service provider location code geographically closest to said retrieved location code; so that utilization of the service providers is systematically load balanced with respect to the geographic location of the client;
 - c3) addressing said initiated request with said retrieved service provider address; and
- d) accessing by said devices a seed system to download an updated table if said devices cannot access the service provider retrieved from said table.

Claim 9 is shown in Fig. 1 and Figs. 3A and 3B, which are described in page 4, line 17 to page 6 line 7 and – page 7 line 11 – page 10 line 22 of Appellants' Patent Application, which has been set forth above.

Claim 17 is the second of the two apparatus claims in this patent application that is on appeal. Claim 17 is a network that comprises a plurality of network devices and a plurality of service providers, the devices receiving service from selected ones of the service providers when the devices and the service providers are interconnected by the network,. The devices each comprising:

a) a first data store storing a location code indicative of that device's geographic location;

b) a second data store storing a table relating geographic location codes and network addresses for said service providers; and

c) each of said devices being programmed to initiate a request by:

c1) retrieving said location code for said device;

c2) accessing said table to retrieve a service provider address associated with a service provider location code geographically closest to said retrieved location code; so that utilization of the service providers is systematically load balanced with respect to the geographic location of the client.

c3) addressing said initiated request with said retrieved service provider address; and

d) accessing by said devices a seed system to download an updated table if said devices cannot access the service provider retrieved from said table.

Claim 17 is shown in Fig. 1 and Figs. 3A and 3B, which are described in page 4, line 17 to page 6 line 7 and – page 7 line 11 – page 10 line 22 of Appellants' Patent Application, which has been set forth above.

VI. GROUNDS OF REJECTION

A. Claims 1, 9, and 17 have been rejected by the Examiner under 35 USC§103(a) as being unpatentable over Ballard (U.S. Patent No. 6,078,960) in view of Swildens et. al. (U.S. Patent No. 6,484,143) and further in view of Zisapel et al. (US Patent No. 6,665,702).

B. Claims 6-7, 13-15 and 21-24 have been rejected by the Examiner under 35 USC§103(a) as being unpatentable over Ballard (U.S. Patent No. 6,078,960) in view of Swildens et. al. (U.S. Patent No. 6,484,143).

C. Claims 2, 10 and 18 have been rejected by the Examiner under 35 USC§103(a) as being unpatentable over Ballard (U.S. Patent No. 6,078,960) in view of Swildens et. al. (U.S. Patent No. 6,484,143) and further in view of Leon (U.S. Patent No. 6,424,954)

D. Claims 3, 11 and 19 have been rejected by the Examiner under 35 USC§103(a) as being unpatentable over Ballard (U.S. Patent No. 6,078,960) in view of Swildens et. al. (U.S. Patent No. 6,484,143) and further in view of Rabinovich (US Patent No. 6,256,675).

E. Claims 5, 13 and 21 have been rejected by the Examiner under 35 USC§103(a) as being unpatentable over Ballard (U.S. Patent No. 6,078,960) in view of Swildens et. al. (U.S. Patent No. 6,481,143) and further in view of Rune (US Patent No. 6,304,913).

VII ARGUMENTS

A. Claims 1, 9, and 17 have been rejected by the Examiner under 35 USC§103(a) as being unpatentable over Ballard (U.S. Patent No. 6,078,960) in view of Swildens et. al. (U.S. Patent No. 6,484,143) and further in view of Zisapel et al. (US Patent No. 6,665,702).

Ballard discloses the following in column 6 lines 31-64;

"Referring to FIG.6, a method for client-side load balancing includes a step 50 in which a client computer 14 requests to access data over the client-server network 10. At another step 52, the client computer 14 executes a server selection function to determine which server 12 to access. A processor 28, for example, reads the load balance list 54 resident on the client computer 14. The server selection function determines which server identified in the list 54 is to be accessed to handle the pending data request. For an embodiment in which there is a load percentage included in the list 54, such percentages are seeds for the server select function. Over time as the server select function is executed over and over, the actual load percentage for

each server computer in the list **54** converges to the specified percentage in the list **54**. According to an alternative scheme, the load select function may randomly select one of the servers in the list **54** or perform a round-robin selection, or perform some mathematical computation.

Once a server is selected, at step **56** a network connection is attempted to connect the client computer **14** to the selected server computer **12**. At step **58** the connect operation is tested to determine if successful. If the connection is successful, then at step **60** the data is read from the server computer **12** and downloaded to the client computer **14**. In addition, during each connection or at regularly determined times or connections, an updated load balance list also is received from the accessed server computer **12**. The updated list replaces prior load balance list stored at the client's computer **14**. As shown in FIG. 4B the updated load balance list may add an additional server and alter the load balance percentages. Alternatively, the updated list may remove a server or just alter the load balance percentages. Thus, one or more servers can be added or removed and load balance percentages can be altered."

Ballard discloses the following in column 6 lines 3-18;

"Each client computer **14** stores a load balance list. Referring to FIG. 4A, in one example, common data is stored on each of ISP servers 1-4. The load balance list includes an identification of the server computers, such as an address. In some instances the list also include a respective load percentage for each of the listed ISP servers computers. The percentage specified in the list for any given server computer may be the same or different than for the other servers identified in the list. Preferably the percentages should add up to 100%. FIG.4A, for example shows a load balance list in which the load is to be divided equally among four ISP server computers **18** (i.e., ISP servers 1-4). Each server in the list includes common data that may be accessed by a client computer. In some embodiments, servers may be identified as uplink servers, downlink servers or both uplink and downlink servers."

Ballard discloses a list which appears on a computer which is over time the load balance of the list may be refined.

Swildens discloses the following in Column 17 lines 42-54.

"A server name, physical location, and network location identify each location. For example, the last location in FIG. 6D is labeled as "server-4/sterling/exodus." This label identifies a server on the Exodus network located in Sterling, VA., USA.

After all, the overall timetable, details for each location are presented in individual tables. FIG. 5 shows a table containing the details for the location "server-14, dc, cw, a server located on the Cable & Wireless Network in Washington D.C., USA. The IP address of the actual server is shown in the heading of the table so you can perform additional tests, if needed, (trace route and so on) on the actual server performing the test. The location table in FIG. 6E shows data for the www.speedera.com website."

Swilden discloses an IP address of the actual server so that additional tests may be performed.

Zisapel discloses the following in col. 4, lines 29 -39.

"There is also provided in accordance with a preferred embodiment of the present invention a network load balancing system including a network, at least two load balancers connected to the network, and a requestor connected to the network, where each of the at least two load balancers is operative to determine the network proximity of the requestor, and at least one of the load balancers is operative to designate a closest one of the load balancers by ranking the load balancers by network proximity and direct requests from either of the requester and a subnet of the requester to the closest load balancer."

Zisapel uses a load balancer which is connected to the network.

Neither Ballard, Swildens or Zisapel taken separately or together disclose or anticipate the invention claimed by Appellant in claims 1, 9 and 17. The cited patents do not disclose or anticipate steps c2) and d) of claims 1, 9 and 17 namely: accessing said table to retrieve a service provider address associated with a service provider location code geographically closest to said retrieved

location code so that utilization of the service providers is systematically load balanced with respect of the geographic location of the client, and accessing by said devices a seed system to download an updated table if said devices cannot access the service provider retrieved from said table.

An advantage of the foregoing claim limitation is that a server that is geographically close to the client may be utilized to distribute the work load on a geographic basis.

An additional advantage of Appellant's claim step d is that, Appellant is accessing a table on the device, thus the only time Appellant's devices need to refer to a seed system is to obtain a new updated table when a device can not access the service provider using the address stored on the device. Zisapel does not disclose or anticipate the seed system claimed by Appellant in step d). Zisapel load balancer is involved in every request. Thus, Appellant's claimed seed system requires less computer resources and Appellant's devices can continue to access the system provider as long as the system providers addresses stored in the device table are accurate.

Notwithstanding the foregoing, in rejecting a claim under 35 U.S.C. §103, the Examiner is charged with the initial burden for providing a factual basis to support the obviousness conclusion. *In re Warner*, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967); *in re Lunsford*, 375 F.2d 385, 148 USPQ 721 (CCPA 1966); *in re Freed*, 425 F.2d 785, 165 USPQ 570 (CCPA 1970). The Examiner is also required to explain how and why one having ordinary skill in the art would have been led to modify an applied reference and/or combine applied references to arrive at the claimed invention. *In re Ochiai*, 37 USPQ2d 1127 (Fed. Cir. 1995); *in re Deuel*, 51 F.3d 1552, 34 USPQ 1210 (Fed. Cir. 1995); *in re Fritch*, 972 F.2d 1260, 23 USPQ 1780 (Fed. Cir. 1992); *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988). In establishing the requisite motivation, it has been consistently held that both the suggestion and reasonable expectation of success must stem from the prior art itself, as a whole. *In re Ochiai*, supra; *in re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir.

1991); *in re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *in re Dow Chemical Co.*, 837 F.2d 469, 5 USPQ2d 1529 (Fed. Cir. 1988).

B. Claims 6-7, 13-15 and 21-24 have been rejected by the Examiner under 35 USC§103(a) as being unpatentable over Ballard (U.S. Patent No. 6,078,960) in view of Swildens et. al. (U.S. Patent No. 6,484,143).

Claim 6 depends on claim 5 and claim 5 depends on claim 1. Claim 13 depends on claim 9, and claim 21 depends on claim 17. Claims 5, 13 and 21 include a limitation wherein a group of said service providers share a common location code, said device addressing said initiated request to a primary service provider in said group, and said device being further programmed to address said initiated request to an alternate service provider in said group if said device cannot log on to said primary service provider.

The Examiner stated in page 8 of the Final Rejection the following: "Ballard teaches an emergency back-up load balance list (table) whereas a client computer is unable to access any of the servers in the normal load balance table (primary or alternate). See col. 6, lines 10 -29. See also Rune col. 1, lines 57-63.

Ballard discloses the following in column 6 lines 8 – 29;

"The percentage specified in the list for any given server computer may be the same or different than for other servers identified in the list. Preferably the percentages should add up to 100%. Fig. 4A, for example shows a load balance list in which the load is to be divided equally among four ISP server computers **18** (i.e., ISP servers 1-4). Each server in the list includes common data that may be accessed by a client computer. In some embodiments, servers may be identified as uplink servers, downlink servers or both uplink and downlink servers.

In some embodiments, each client computer also stores an emergency back-up load balance list. This list is used in the event that a client computer **14** is unable to connect to any of the servers in the normal load balance list. Accordingly, at least one of the servers identified in the emergency back-up load balance list should differ from the servers identified in the normal load balance list. Referring to Fig. 5, an exemplary emergency load balance list includes

the data owners own computer servers 15 (e.g., ABC Company servers 1 and 2). One or more other server computers such as an ISP server 18 may be used in addition or instead."

Rune discloses the following in col. 1, lines 54-63.

"The present invention is a method and Internet system that attempts to improve response times by automatically selecting for use a server (e.g., mirror server or alternative server) located relatively close to a requesting host. More specifically, the Internet system can operate to select the closest server from a plurality of servers providing the same service (e.g., mirror servers) or slightly adapted variants of the same service (e.g., alternative servers) each assigned a common host name and a unique Internet Protocol address. The Internet system includes a database (e.g., Domain Name System (DNS) server) for storing the common host name and the plurality of unique Internet Protocol addresses."

Swildens discloses the following in column 10, lines 37-65:

"Latency problems are often aggravated by packet loss. Packet loss, common on the Internet, tends to worsen at "peering points," locations where different networks connect. One way to reduce packet loss and latency is to install content servers closer to users and ensure that when a user requests data, the request is routed to the closest available server. The present network has deployed web caches, streaming, and FTP servers throughout the Internet, on many networks close to end users. In addition, the network uses a Global Traffic Manager that routes traffic to the closest, most available and least loaded server.

The network often synchronizes the content on the customer's origin site with the Web cache servers on the network. When new content is placed on an origin site and when users make requests for that content, it is automatically replicated to Web cache servers in the network. When new content is published on the origin site with a new name, it is generally immediately available from all caches in the present network. For example, the network user might add an object to the site where a similar object exists:

Add www.customer.com/images/picture2.jpg to the same site as "www.customer.com/images/picturejpg."

When a request for “picture2.jpg” arrives at a cache the first time, the cache in the network determines that it does not have a copy of “picture2.jpg”, and the cache will request a copy from the origin site. To keep in synchronization with the origin site, the caches periodically check the content they have cached against the copy of the content in the origin site.”

Swildens discloses the following in column 4, line 62 to column 5, line 16:

“The present system also uses one or more probes to detect information about certain criteria from the network. There are probes including a NetProbes, a ServiceProbe and a LatencyProbe. ServiceProbes test local server resources while LatencyProbes conduct network round trip tests to clients. Each POP in the network is assigned a ServiceProbe and a LatencyProbe – these can be separate machines but in most cases, the same machine will perform both types of probe.

The NetProbes are responsible for providing the traffic management system with service and latency metrics. The metrics are reported to the DNS server and LogServers. FIG. 2 is a simplified diagram 200 of these probes according to embodiments of the present invention. This diagram is merely an example which should not limit the scope of the claims herein. One of ordinary skill in the art would recognize many variations, alternatives, and modifications. The diagram 200 includes a POP 201, which includes a NetProbes server. Service probes monitor the POP servers to test the availability and load of the services they support. The latency probe tests the round trip time between the POP and the DNS servers.”

Thus, Swildens redirects the device to connect to a cache. Then the device looks for the content on the cache. If the content is missing on the cache, the cache retrieves the content from the origin system.

In addition to the arguments made in above Section A, in Appellant’s claims 6, 13 and 21 Appellant will try service provider 1 at a location code. If the above fails, Appellant will try service provider 2 at the same location code.

Thus, the cited art does not disclose a limitation wherein a group of said service providers share a common location code, said device addressing said

initiated request to a primary service provider in said group, and said device being further programmed to address said initiated request to an alternate service provider in said group if said device cannot log on to said primary service provider.

C. Claims 2, 10 and 18 have been rejected by the Examiner under 35 USC§103(a) as being unpatentable over Ballard (U.S. Patent No. 6,078,960) in view of Swildens et. al. (U.S. Patent No. 6,484,143) and further in view of Leon (U.S. Patent No. 6,424,954)

Claim 2 depends on claim 1, claim 10 depend on claim 9 and claim 18 depends on claim 17. Claims 2, 10 and 18, respectively, claim the network device being a mailing device, and a mailing device.

The Examiner stated in pages 12 of the Final Rejection:

"On page 5 of the specification, applicant indicates that network devices include mailing devices such as postage meters and rating scales and on page 3 applicant asserts that a mailing device is any device which may know as a matter of its operation its geographic address. (emphasis added)

Neither Ballard nor Swildens make specific mention of such device. However, in Fig 1A, and col. 1, line 49-col. 2, line 27 Leon discloses such a device. Thus, it would have been obvious at the time of the invention for an artisan of ordinary skill in the art to combine the use of client-side load balancing as taught by Ballard and the physical location code disclosed by Swildens with the mailing device taught by Leon. Since a mailing device makes use of zip codes as unique identification, it would readily incorporate zip codes as a convenient geographic ISP locator."

In addition to the arguments made in above Section A, claims 2, 10 and 18, respectively, claim the network device being a mailing device.

Leon discloses the following in column 1 line 49-column 2 line 27.

"The present invention relates to the field of postage metering systems, and more particularly to a portable, secure, low cost, and flexible postage metering system. A postage meter allows a user to print postage or other indicia of value on envelopes or other media. Conventionally, the postage meter can be leased or rented from a commercial group (e.g., Neopost Inc.). The user purchases a fixed amount of value beforehand and the meter is programmed with this amount. Subsequently, the user is allowed to print postage up to the programmed amount. Historically, postage meters have been dedicated, stand-alone devices, capable only of printing postage indicia on envelopes (or labels, in the case of parcels). These devices normally reside at a single user location and only provide postage metering for that location. Such postage meters often require the user to physically transport the device to a post office for resetting (i.e., increasing the amount of postage contained in the meter). An advance over this system is the ability to allow the user to reset the meter via codes that are provided by either the manufacturer or the postal authority once payment by the user had been made. Modern electronic meters are often capable of being reset directly by a registered party on-site (at the user's location) via communications link. A system that performs meter resetting in this manner is known as a Computerized Meter Resetting System (or "CMRS"). The party having authority to reset the meter and charge the user (usually the manufacturer or the postal authority) thus gains access to and resets the meter.

Even with these advancements, postage meters are still, for the most part, restricted to use at a single physical location. As such devices are dedicated (and rather sophisticated in their fail-safe attributes and security), their price tends to be prohibitive for small entities. Moreover, the items requiring postage must often be brought to the device because of the device's physical size and the need for supporting connections (i.e., power, communications, and the like). As can be seen, a postage metering system that is portable, low-cost, secure, and flexible in operation is highly desirable. Moreover, a system that centralizes both postage accounting and security features is also highly desirable. Such a system would allow the printing of postage indicia at locations that are convenient to the end-user by allowing the user to take a portion of the system to the item in need of postage rather than the reverse."

Contrary to the Examiner's statement a mailing device does not use a zip code as a unique identifier. Many mailing devices are located in each zip code. Furthermore, the art cited by the Examiner makes no suggestion that a mailing device may be used in step c(2) of independent claims 1, 9, and 17.

D. Claims 3, 11 and 19 have been rejected by the Examiner under 35 USC§103(a) as being unpatentable over Ballard (U.S. Patent No. 6,078,960) in view of Swildens et. al. (U.S. Patent No. 6,484,143) and further in view of Rabinovich (US Patent No. 6,256,675).

In addition to the arguments made in above section a, please consider the following:

Rabinovich discloses the following in column 7 line29-54;

"A distance metric is determined for each host at which the requested replica is stored, step **203**. The distance metric measures the cost of communicating between the requester and the host. For example, in one embodiment, the distance metric is proportional to the latency between the requester and the host that stores a replica of the requested object. In another embodiment, the distance metric is inversely proportionate to the bandwidth of the channel between the requester and the host.

The request distributor selects a host that stores a replica of the requested object to respond to the request based upon the request metric and the distance metric of the host in relation to the request metric and distance metrics of the other hosts that also store replicas of the requested object, step **204**.

In one embodiment, the request distribution decision as to which host to assign the request is made in accordance with the method shown in FIG. 3. A host p is identified that stores a replica of the requested object and that has the best distance metric m in relation to the requester, step **301**. For example, in one embodiment, the host that is geographically closest to the requester will be determined to have the best distance metric in relation to the requester. In another embodiment, the host which can communicate the least

expensively with the requester will be determined to have the best distance metric in relation to the requester.”

The art cited by the Examiner does not disclose or anticipate the approximate distance between two geographic locations being calculated as a function of location codes corresponding to the two locations.

E. Claims 5, 13 and 21 have been rejected by the Examiner under 35 USC§103(a) as being unpatentable over Ballard (U.S. Patent No. 6,078,960) in view of Swildens et. al. (U.S. Patent No. 6,481,143) and further in view of Rune (US Patent No. 6,304,913).

In addition to the arguments made in above section A, please consider the following:

Neither Ballard nor Swildens teach a group of said service providers share a common location code and selected ones of those of said devices which are closest to said group address initiated a request to a primary service provider in said group. However, Rune expressly discloses a group of DNS servers linked in a hierarchical relationship (functionally equivalent to sharing a common location code) and this alternate service provider concept (a DNS is a Service Provider). See col. 5, lines 19-37.

Thus, it would have been obvious at the time of the invention for an artisan of ordinary skill in the art to combine the use of client-side load balancing as taught by Ballard and the traffic management disclosed by Swildens with the group of said service providers share a common location code and selected ones of those of said devices which are closest to said group address initiated a request to a primary service provider in said group taught by Rune. This system would provide for double redundancy thereby insuring QoS with guaranteed access to the network.”

Rune discloses the following in lines 6-38 of column 5:

“Referring to FIG. 2, there is illustrated a simplified flowchart of the selection method 200 used to select the closest or most appropriate alternative server 158b from the viewpoint of the requesting host 152a. Beginning at steps 202 and

204, the host name **114** is assigned (step **202**) to the set of alternative servers **158b** and **158e** and a unique IP address **116** is assigned (step **204**) to each alternative server so that no two alternative servers have the same IP address. For example, the set of alternative servers **158b** and **158e** can have the host name **114** of "mirror servers" and IP addresses **116** of "209.180.55.2" (alternative server **158b**) and "209.180.55.9" (alternative server **158e**).

At step **206**, the assigned host name **114** and the unique IP addresses **116** are stored in some or all of the look-up tables **111** of the DNS servers **156a-156e**. The DNS servers **156a-156e** can be different levels of hierarchy such that one DNS server (e.g., DNS server **156a**) may not store a particular host name and IP address while another DNS server (e.g., DNS server **156e**) a step lower in the hierarchy may store the particular host name and IP addresses.

At step **208**, the requesting host (e.g., requesting host **152a**) transmits a translation request containing the host name **114** of the alternative servers **158b** and **158e** to one of the DNS servers (e.g., DNS server **156a**). In the event one of the local DNS servers (e.g., DNS server **156a**) does not recognize the host name **114** transmitted in the translation request, then the local DNS server **156a** would refer the request to another DNS server (e.g., DNS server **156c**) known as a DNS root server which locates yet another

DNS server (e.g., DNS server **156e**) that is a step lower in the hierarchy which may recognize the transmitted host name.

In the invention disclosed by Rune, DNS servers **156a-156e** are involved at the beginning of the operation.

The inventions disclosed by Ballard, Swildens and Rune taken separately or together, do not disclose or anticipate the invention claimed by Appellant's invention in claims 5, 13 and 21. The cited references do not disclose or anticipate a group of said service providers sharing a common location code and selected ones of those of said devices which are closest to said group address initiated a request to a primary service provider in said group; when said selected devices addressing said initiated request to an alternate service provider in said group if they cannot log on to said primary service provider.

In other words, Rune's DNS servers 156a-156e are equivalent to Appellant's seed system 34, but are used in a different manner. In Appellant's invention, the table is used first. If the information is available in the table, there is no need to go to the seed system. The seed system is only used as a last resort, when the information from the table is not correct and has to be updated. Consequently, Appellant's claimed invention is faster than the inventions disclosed by Rune, since Rune's DNS servers 156a-156e handle a larger amount of traffic than Applicant's seed system 34, which takes additional time.

In view of the above Appellant respectfully submits that appealed claims 1 – 7, 9 -15 and 17 - 27 in this application are patentable. It is requested that the Board of Appeal overrule the Examiner and direct allowance of the rejected claims.

Respectfully submitted,



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VIII. APPENDIX OF CLAIMS INVOLVED IN THE APPEAL

1. A method for balancing the load of requests from a plurality of network devices for service from a selected one of a plurality of service providers, said devices and said service providers being interconnected by a network, said method comprising the steps of:
 - a) in each of said devices, storing a location code indicative of geographic locations of said devices;
 - b) in each of said devices, storing a table relating geographic location codes and network addresses for said service providers; and
 - c) said devices being programmed so that a requesting device initiates a request by:
 - c1) retrieving said location code for said requesting device;
 - c2) accessing said table to retrieve a service provider address associated with a service provider location code geographically closest to said retrieved location code; so that utilization of the service providers is systematically load balanced with respect to the geographical location of the client
 - c3) addressing said initiated request with said retrieved service provider address; and

d) accessing by said devices a seed system to download an updated table if said devices cannot access the service provider retrieved from said table.

2. The method of claim 1 wherein at least one of said network devices is a mailing device.

3. The method of claim 1 wherein at least an approximate distance between two geographic locations can be calculated as a function of location codes corresponding to said two locations.

4. The method of claim 3 wherein said location codes are zip codes used by a postal service.

5. The method of claim 1 wherein a group of said service providers share a common location code and selected ones of those of said devices which are closest to said group address initiated a request to a primary service provider in said group; said method further comprising the step of: said selected devices addressing said initiated request to an alternate service provider in said group if they cannot log on to said primary service provider.

6. The method of claim 5 further comprising the step of: said selected devices accessing said table to retrieve another service provider address associated with

a service provider location code next closest to said retrieved location code if they cannot log on to said primary or said alternate service provider.

7. The method of claim 1 further comprising the step of: said devices accessing said table to retrieve another service provider address associated with a service provider location code next closest to said retrieved location code if they cannot log on to said service provider.

9. A network device, said device receiving service from a selected one of a plurality of service providers when said device and said service providers are interconnected by a network, said device comprising:

a) a first data store storing a location code indicative of said device's geographic location;

b) a second data store storing a table relating geographic location codes and network addresses for said service providers; and

c) said device being programmed to initiate a request by:

c1) retrieving said location code for said device;

c2) accessing said table to retrieve a service provider address associated with a service provider location code geographically closest to said retrieved location code; so that utilization of the service providers is systematically load balanced with respect to the geographic location of the client;

c3) addressing said initiated request with said retrieved service provider address; and

d) accessing by said devices a seed system to download an updated table if said devices cannot access the service provider retrieved from said table.

10. The device of claim 9 wherein said network device is a mailing device.
11. The device of claim 9 wherein at least an approximate distance between two geographic locations can be calculated as a function of location codes corresponding to said two locations.
12. The device of claim 11 wherein said location codes are zip codes used by a postal service.
13. The device of claim 9 wherein a group of said service providers share a common location code, said device addressing said initiated request to a primary service provider in said group, and said device being further programmed to address said initiated request to an alternate service provider in said group if said device cannot log on to said primary service provider.
14. The device of claim 13 wherein said device is further programmed to access said table to retrieve another service provider address associated with another service provider location code next closest to said retrieved location code if said device cannot log on to said primary or said alternate service provider.

15. The device of claim 9 wherein said device is further programmed to access said table to retrieve another service provider address associated with another service provider location code next closest to said retrieved location code if said device cannot log on to said service provider.

17. A network comprising a plurality of network devices and a plurality of service providers, said devices receiving service from selected ones of said service providers when said devices and said service providers are interconnected by said network, said devices each comprising:

- a) a first data store storing a location code indicative of that device's geographic location;
- b) a second data store storing a table relating geographic location codes and network addresses for said service providers; and
- c) each of said devices being programmed to initiate a request by:
 - c1) retrieving said location code for said device;
 - c2) accessing said table to retrieve a service provider address associated with a service provider location code geographically closest to said retrieved location code; so that utilization of the service providers is systematically load balanced with respect to the geographic location of the client.
 - c3) addressing said initiated request with said retrieved service provider address; and

d) accessing by said devices a seed system to download an updated table if said devices cannot access the service provider retrieved from said table.

18. The network of claim 17 wherein at least one of said devices is a mailing device.

19. The network of claim 17 wherein at least an approximate distance between two geographic locations can be calculated as a function of location codes corresponding to said two locations.

20. The network of claim 19 wherein said location codes are zip codes used by a postal service.

21. The network of claim 17 wherein a group of said service providers share a common location code, selected ones of those of said devices which are closest to said group addressing said initiated request to a primary service provider in said group; said selected devices being further programmed to address said initiated request to an alternate service provider in said group if they cannot log on to said primary service provider.

22. The network of claim 21 wherein said selected devices are further programmed to access said table to retrieve another service provider address

associated with another service provider location code next closest to said retrieved location code if they cannot log on to said primary or said alternate service provider.

23. The network of claim 17 wherein said devices are further programmed to access said table to retrieve another service provider address associated with another service provider location code next closest to said retrieved location code if they cannot log on to said service provider.

24. The network of claim 17 wherein said devices are further programmed to access a seed system to download an updated table if said table becomes invalid.

25. The method of claim 1, wherein the location code is a zip code.

26. The method of claim 9, wherein the location code is a zip code.

27. The method of claim 17, wherein the location code is a zip code.

IX EVIDENCE APPENDIX

There is no additional evidence to submit.

X RELATED PROCEEDING APPENDIX

There are no related proceedings.

1/3

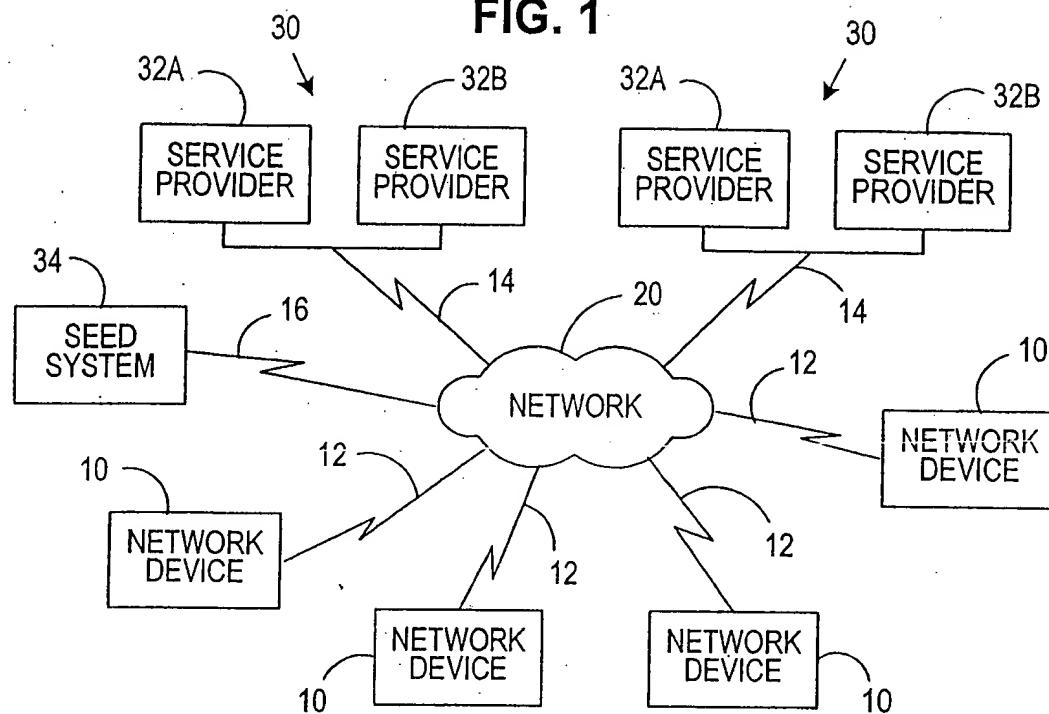
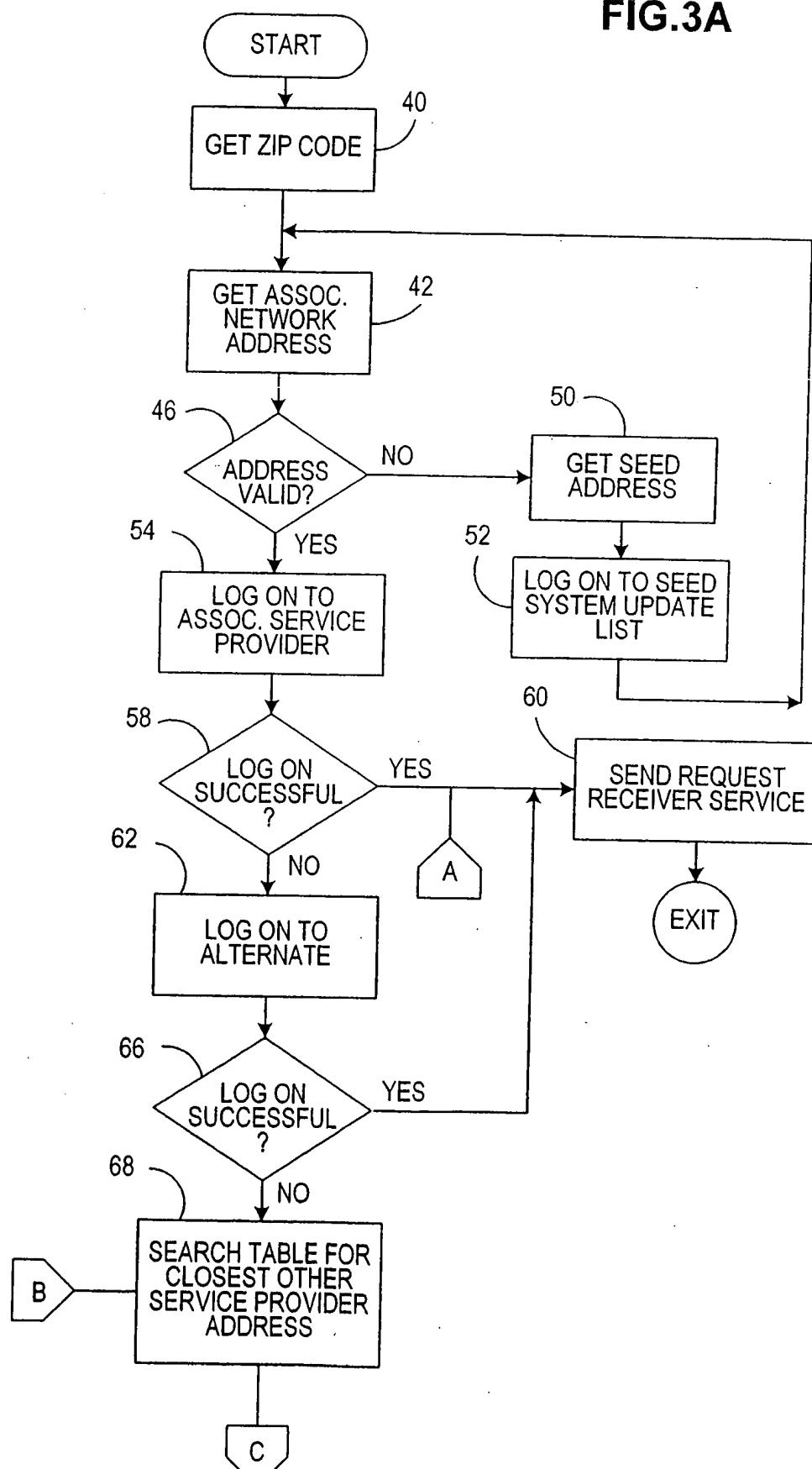
FIG. 1

FIG.3A



3/3

FIG.3B